## Density Practice Problems

The density of a substance is a measure of how much mass is packed into a certain volume of the substance. Substances with
 a high density, like steel, have molecules that are packed together tightly. Substances with a low density, like cork, have fewer molecules packed into the same amount of space.

The density of a substance can be found by dividing its mass by its volume. As long as a substance is homogeneous, the size or shape of the sample doesn't matter. The density will always be the same. This means that a steel paper clip has the same density as a steel girder used to build a bridge.

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\text { Density }=\text { Mass } \div \text { Volume } \quad \mathrm{D}=\frac{\mathrm{m}}{\mathrm{~V}}
$$

Use the density formula to solve the following problems. Show all work and the answer must have the correct units. Remember that volume can have different forms. A block of ice with a volume of $3 \mathrm{~cm}^{3}$ would be 3 mL of liquid after being melted.

1. What is the density of CO gas if 0.196 g occupies a volume of 100 ml ?


#### Abstract

Answer $\qquad$ 2. A block of wood 3 cm on each side has a mass of 27 g . What is the density of the block? (Hint, don't forget to find the volume of the wood.)


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3. An irregularly shaped stone was lowered into a graduated cylinder holding a volume of water equal to 2 ml . The height of the water rose to 7 ml . If the mass of the stone was 25 g , what was its density?

Answer
4. A $10.0 \mathrm{~cm}^{3}$ sample of copper has a mass of 89.6 g . What is the density of copper?

Answer $\qquad$
5. Silver has a density of 10.5 grams $/ \mathrm{cm}^{3}$ and gold has a density of $19.3 \mathrm{~g} / \mathrm{cm}^{3}$. Which would have the greater mass, $5 \mathrm{~cm}^{3}$ of silver or $5 \mathrm{~cm}^{3}$ of gold?


#### Abstract

Answer $\qquad$ 6. Five mL of ethanol has a mass of 3.9 g , and 5.0 mL of benzene has a mass of 44 g . Which liquid is denser?


## Answer

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7. A sample of iron has the same dimensions of $2 \mathrm{~cm} \times 3 \mathrm{~cm} \times 2 \mathrm{~cm}$. If the mass of this rectangular-shaped object is 94 g , what is the density of iron?
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